



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,278	08/18/2003	Christof Erban	247384US55CONT	2448
20582	7590	05/11/2004	EXAMINER	
JONES DAY 51 Louisiana Avenue, N.W. WASHINGTON, DC 20001-2113			DIAMOND, ALAN D	
		ART UNIT		PAPER NUMBER
				1753

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/642,278	ERBAN, CHRISTOF
	Examiner Alan Diamond	Art Unit 1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-21 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 18 August 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08182003</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 7 and 12 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 7 does not further limit claim 1 because claim 1 already requires removing the bypassing of the external connections when the difference between the measurement signals does not exceed the threshold value.

Claim 12 does not further limit claim 11 because the at least two of "the solar cells" at line 3 of claim 11 that are spaced from each other and serve as sensors are referring to at least two of the individual solar cells connected together electrically in series, as set forth at line 2 in claim 11. In other words, in claim 11, the at least two solar cells serving as the sensors are part of the series circuit. Thus, when claim 12 sets forth that the solar cells serving as sensors are not integrated in the series circuit, it is not further limiting claim 11.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. The line numbers referred to below are claim line numbers, not page line numbers.

In claim 1 at line 11, in claim 6, at line 9, and in claim 11 at line 10, the term "predetermined threshold" is indefinite because it is subjective. It is suggested that said term be changed to "threshold". The same applies to dependent claims 2-5, 7-10, and 12-21.

Double Patenting

4. Applicant is advised that should claims 3 and 4 be found allowable, claims 8 and 9 will be objected to under 37 CFR 1.75 as being substantial duplicates thereof, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1753

6. Claims 6, 11-13, 15, 16, 17, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Takehara et al, U.S. Patent 5,669,987.

As seen in Figure 9, Takehara et al teaches a solar cell array (i.e., instant solar cell module) comprising strings (11,12, 3,14) which each have series connected solar cells, wherein the strings (11,12,13,14) are connected in parallel (see also col. 3, lines 58-63). Each string is a detection cell, and strings (11) and (14) are disposed at different edges of the module, as per claim 17. For each string (11,12,13,14) power conversion is performed by respective power conversion unit (21,22,23,24) and the resultant values, i.e., voltages or currents depending on what is being measured, are measured by respective parameter detection units (41,42,43,44) (see col. 4, line 53-col. 5, line 13; and col. 9, lines 25-39). The parameter detection units (41,42,43,44) then send the measured values to comparator (5) which compares the measured values (see col. 9, lines 25-39). If an abnormality value is found for a string, i.e., the voltage or current for a particular string is too low compared to the voltages and currents of the other strings, then a control unit (82) shuts off the power conversion unit for the abnormal string (see col. 5, lines 15-48; and col. 9, lines 25-39). Thus, the control unit (82) bypasses the external connections of the string when the power conversion unit for the string is shut off. Since Takehara et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

7. Claims 1-13, 15-17, 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsushita et al, U.S. Patent 6,653,549. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers

has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15. It is also noted that the instant German foreign priority papers are not of record.

As seen in Figures 14, 17, and 18 Matsushita et al teaches a solar cell module having series connected solar cells and detection solar cells (12a to 12f) along the perimeter of the module (see also Example 6A bridging cols. 20 to 23). The current or voltage of the detection solar cells (12a to 12f) is detected and evaluated as here claimed, such that when the difference between the measured voltages or currents exceeds a threshold value, the external connections of the module are bypassed by a switching device (16) (see Example 6A bridging cols. 20 to 23). As seen in Example 7A bridging cols 23 to 26, and Figures 19 to 21, the entire solar cell module need not be bypassed, but rather only the strings corresponding to a sensor that has a difference exceeding the threshold value. Since Matsushita et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehara et al, U.S. Patent 5,669,987.

As seen in Figure 9, Takehara et al teaches a solar cell array (i.e., instant solar cell module) comprising strings (11,12, 3,14) which each have series connected solar

cells, wherein the strings (11,12,13,14) are connected in parallel (see also col. 3, lines 58-63). Each string is a detection cell, and strings (11) and (14) are disposed at different edges of the module, as per claims 10 and 17. For each string (11,12,13,14) power conversion is performed by respective power conversion unit (21,22,23,24) and the resultant values, i.e., voltages or currents depending on what is being measured, are measured by respective parameter detection units (41,42,43,44) (see col. 4, line 53-col. 5, line 13; and col. 9, lines 25-39). The parameter detection units (41,42,43,44) then send the measured values to comparator (5) which compares the measured values (see col. 9, lines 25-39). If an abnormality value is found for a string, i.e., the voltage or current for a particular string is too low compared to the voltages and currents of the other strings, then a control unit (82) shuts off the power conversion unit for the abnormal string (see col. 5, lines 15-48; and col. 9, lines 25-39). Thus, the control unit (82) bypasses the external connections of the string when the power conversion unit for the string is shut off. The use of an electromechanical relay or a semiconductor power switch to perform the shutting off would have been within the skill of an artisan. Takehara et al teaches the limitations of the instant claims other than the difference which is discussed below.

With respect to claim 1 and its dependent claims Takehara et al does no specifically teach reconnecting the power conversion unit for the string when the abnormality in voltage or current is no longer detected. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have

reconnected the shut off power conversion unit when an abnormality of current or voltage is no longer detected so that the power from the sting could be utilized.

With respect to claim 14, it would have been well within the skill of an artisan to have placed Takehara et al's parameter detection units and control unit in the solar cell module so as to save space.

10. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita et al, U.S. Patent 6,653,549. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15. It is also noted that the instant German foreign priority papers are not of record.

As seen in Figures 14, 17, and 18 Matsushita et al teaches a solar cell module having series connected solar cells and detection solar cells (12a to 12f) along the perimeter of the module (see also Example 6A bridging cols. 20 to 23). The current or voltage of the detection solar cells (12a to 12f) is detected and evaluated as here claimed, such that when the difference between the measured voltages or currents exceeds a threshold value, the external connections of the module are bypassed by a switching device (16) (see Example 6A bridging cols. 20 to 23). As seen in Example 7A bridging cols 23 to 26, and Figures 19 to 21, the entire solar cell module need not be bypassed, but rather only the strings corresponding to a sensor that has a difference exceeding the threshold value. The use of an electromechanical relay or a semiconductor power switch to perform the switching would have been within the skill of

an artisan. Matsushita et al teaches the limitations of the instant claims other than the difference which is discussed below.

Matsushita et al does not specifically teach, for example, that its signal processing/comparison unit (110), control unit (111) and switch (16,61) are disposed in the solar cell module. However, it would have been well within the skill of an artisan to have placed Matsushita et al's processing/comparison unit (110), control unit (111) and switch (16,61) in the solar cell module so as to save space.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Watkinson (U.S. 5,001,415) teaches power array (61) and sensor cells (63). However, Watkinson never bypasses the external connections of the power array. Regulator (73) increases or decreases power flow, but never bypasses the external connections (see col. 6, lines 48-57).

U.S. Patents 4,243,928, 6,350,944, 6,512,458, and 6,593,520, and JP 58-219777 are hereby made of record.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
April 29, 2004

